

REMARKS

Claims 1-14 are pending in the present application.

Applicants wish to thank Examiner Metzmaier for the helpful and courteous discussion with their undersigned Representative on July 2, 2003. The content of this discussion is believed to be represented by the following comments and the amendments presented herein.

The rejections of Claims 1-4 and 8-10 under 35 U.S.C. §102(b) and of Claims 5 and 11 under 35 U.S.C. §103(a), each over Marwitz et al (U.S. 3,671,485), is obviated in part by amendment and traversed in part.

The present invention relates to the coated material which gives an appropriate strength, a good light transmission, a good water repelling property and softness, and a flame retarding property to fiber materials (see Abstract). A main material of present invention is an alkoxy silane oligomer which has three hydrolyzable substituents ($\equiv\text{Si-OR}$) and one unhydrolyzable substituent ($\equiv\text{Si-R}$).

When the coating solution in which the main material is the alkoxy silane oligomer, which has three hydrolyzable substituents and one unhydrolyzable substituent, is coated on the fiber materials, both hard siloxane bonds ($\equiv\text{Si-O-Si}\equiv$) and unreacted bonds ($\equiv\text{Si-R}$) generate in a coated film.

These hard siloxane bonds give a moderate strength and a moderate fire retardant property to the fiber materials. However, since the unreacted part does not produce a bonding with the networks of the generated siloxane bonds, the coated film maintains a degree of pliability. Moreover, the organic property of the unreacted group gives a water

repellence to the fiber materials. In other words, the siloxane bond with a moderate strength, a moderate fire retardant property, a good water repellency and a moderate pliability can be coated on the fiber materials.

Applicants submit that Marwitz et al neither discloses nor suggests the present invention and, as such, this reference fails to anticipate and/or render the present invention obvious.

At the outset, as the Examiner has conceded, Marwitz et al only disclose a silane that, at best, reads on formula 1 when n=1. However, formula 1 as defined in present Claims 1 and 8 defines "n" as being 2-10. The standard for determining anticipation requires that the reference "must teach every element of the claim" (MPEP §2131). Therefore, Marwitz et al clearly fails to meet this standard. Therefore, the anticipation rejection over Marwitz et al is no longer tenable.

Moreover, Applicants submit that Marwitz et al cannot even support a *prima facie* case of obviousness over the present claims. The Federal Circuit has defined the parameters that may be considered in determining the proper use of chemical structure as the basis for obviousness rejections under 35 U.S.C. § 103 in *In re Jones*, 21 USPQ2d 1941 (Fed. Cir. 1992). The court cited the following examples of relationships that have given rise to a *prima facie* case of obviousness:

triorthoesters and tetraorthoesters;
stereoisomers;
adjacent homologs and structural isomers; and
acid and ethyl ester (*Id.*, at 1943).

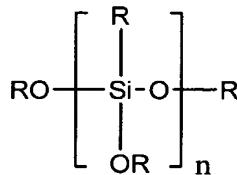
In the present case, there exists no motivation to modify the compounds disclosed by Marwitz et al to be polymeric as defined in present Claims 1 and 8 (and all claims dependent therefrom). Further, Marwitz et al fails to satisfy any of the above-mentioned relationships to

be defined as homologs by the Federal Circuit (i.e., the Court has not recognized a polymer to be homologous to a monomer). Therefore, the obviousness rejection also must fall.

Despite the aforementioned clear deficiencies in the disclosure of Marwitz et al., Applicants wish to make the following additional comments regarding the differences between the present invention and the disclosure of Marwitz et al.

(1) The present invention relates to the coated material, in which the alkoxy silane oligomer is the main material, the hydrolysable organometallic compound is used as a catalyst and these materials are dissolved in a solvent. And the hydrolysis and poly-condensation reactions after being coated on the fiber material are described in detail. The present invention also relates to the coated material which gives an appropriate strength, a good light transmission, a good water repelling property and softness, and a flame retarding property to the fiber materials.

The material compound which suits these purposes is realizable only with the Compound 1 shown in present invention.



Compound 1 in present invention: (see Claims 1 and 8).

(2) Components of the present invention:

1. The main material is the alkoxy silane oligomer which has three hydrolyzable substituents ($\equiv\text{Si}-\text{OR}$) and one unhydrolyzable substituent ($\equiv\text{Si}-\text{R}$).
2. Catalyst: Hydrolyzable organometallic compound.
3. Solvent (isopropyl alcohol) for mixing of the both.

(3) Characteristics of the reaction:

1. Coating solution, which includes above components, is coated on the surface of the fiber materials and then penetrates into the inside of them.

2. Hydrolyzable organometallic compound (catalyst) reacts with water which exists in or on the fiber materials, and then, starts a decomposition reaction.

3. At this time, the alkoxy silane oligomer, which is the main component, reacts with the decomposed catalyst and then hydrolysis and poly-condensation reactions start.

4. Siloxane bond chains, which consequently have a moderate intensity, a good water repellence, etc., are coated on the fiber materials.

(4) Characteristics of the coated film of the present invention:

When the coating solution in which the main material is the alkoxy silane oligomer which has three hydrolyzable substituents and one unhydrolyzable substituent is coated on the fiber materials, both hard siloxane bonds ($\equiv\text{Si}-0-\text{Si}\equiv$) and unreacted bonds ($\equiv\text{Si}-\text{R}$) generate in the coated film.

The hard siloxane bonds give a moderate strength and a moderate fire retardant property to the fiber materials. On the other hand, since the unreacted part does not produce a bonding with the networks of the generated siloxane bonds, a pliability is imparted on the coated film. Moreover, the organic property of the unreacted group gives a water repellence to the fiber materials. That is, the siloxane bond with a moderate strength, a moderate fire retardant property, a good water repellency and a moderate pliability can be coated on the fiber materials.

Therefore, the present invention relates to the coated material, in which the main material is the alkoxy silane oligomer which has three hydrolyzable substituents and one unhydrolyzable substituent, the hydrolysable organometallic compound is used as the catalyst

and these materials are dissolved in the solvent. And moreover the scheme of hydrolysis and poly-condensation reactions after coating on the fiber materials is clearly described.

The present invention is clearly at opposite of Marwitz et al, which can best be summarized as follows:

(1) The invention of Marwitz et al relates to a novel release agent system for use on substrates which come into contact with sticky or tacky materials from which the substrate must be later removed.

(2) Compositions of the coating solution of Marwitz et al involve such four segments as

1. $\text{HO-(R}_2\text{SiO-)}_n\text{H}$.
2. A crosslinking alkoxy silane which is free of amino groups
3. A crosslinking amino substituted silicon compound,
4. A tin compound as curing catalyst
5. An organic solvent.

(3) The characteristics of the Marwitz et al reaction:

The main material is $\text{HO-(R}_2\text{SiO-)}_n\text{H}$ of which the polymer obtained after polymerization is only a liner structure. In order to crosslink it, the crosslinking amino substituted silicon compound is necessary.

As stated above, the present invention has the purpose of giving a moderate strength, a moderate pliability, etc. to the fiber materials such as a paper. To make it indispensable, the main material must be "the alkoxy silane oligomer which has three hydrolyzable substituents and one unhydrolyzable substituent" (see Compound 1).

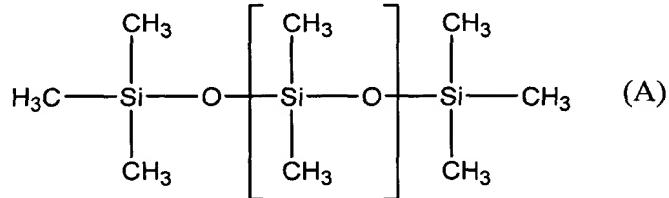
In contrast, since the improvement in the strength of the paper is not an objective in Marwitz et al, the main material of it is $\text{HO-(R}_2\text{SiO-)}_n\text{H}$ of which the polymer obtained after polymerization is *only a liner structure*. In order to crosslink it, the crosslinking amino

substituted silicon compound is necessary. Therefore, the compositions of the coated materials completely differ from each other. Moreover, the purpose of Marwitz et al is also a coating solution with the release property, and completely differs from present invention.

In summary, the differences between the present invention and Marwitz et al include:

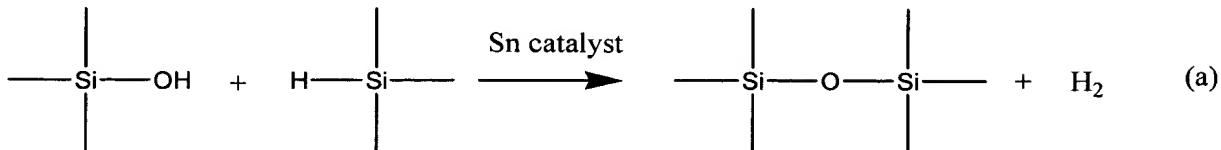
- (a) The purposes of the use and the demand characteristics of coated papers differ from each other.
- (b) The basic structures of the main materials (or silanes) differ from each other.
- (c) The generation mechanisms of the coated films differ from each other. As mentioned above, both patents are completely different.

Further, Marwitz et al provide an example in which a polysiloxane coat is put on papers that are used as release papers. As a coating material for release papers, it is common to use polydimethylsiloxane (A). Dimethylsiloxane part shows a good release property because of its low surface energy.

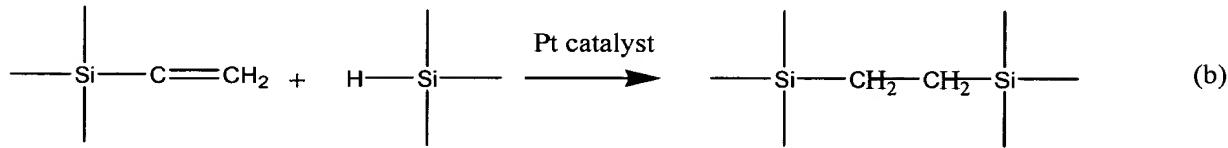


However, since the compound (A) is a straight chain-like silicone oil type, it does not generate the fixed film when it is coated on a paper, and moreover, the problem of movement of the silicone oil inside the paper, which generates the heterogeneity of the oil and the contamination of it into a tape stuck on the release paper, results. The reason why this problem results is that the compound (A) is the silicone oil type, therefore, it does not generate the fixed film. In order to resolve this problem, it has been common to fix the

coated film with the reactive compounds described below. In the case of Sn compound catalyst:

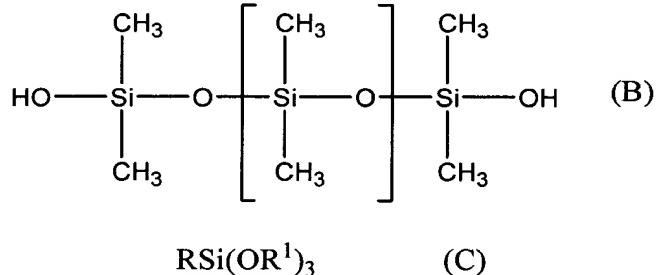


In the case of Pt compound catalyst:



However, the polymerized silicones obtained by the equations (a) and (b) only result in longer straight chain-like polymers, and are therefore lacking in a three dimensional structure, which does not result in a film material.

Further Marwitz et al use the compound (C) in quantity of 50% or less to a compound (B) which is used as a main material, to make the three dimensional structure,



Since the compound (C) has three reactive alkoxy groups ($-\text{OR}^1$) in a molecular, it can construct the three dimensional structure. Consequently, the film thus obtained with the compounds (B) and (C) has a more sufficient structure because of the three dimensionality of the compound (C). However, as mentioned above, Marwitz et al only disclose a silane that,

at best, reads on formula 1 when n=1. However, formula 1 as defined in present Claims 1 and 8 defines "n" as being 2-10.

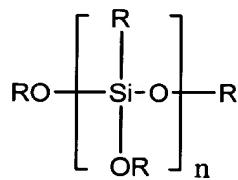
Accordingly, for all the foregoing reasons, Applicants submit that Marwitz et al fails to anticipate or render obvious the present invention. Therefore, Applicants request withdrawal of these grounds of rejection.

The rejection of Claims 1-13 under 35 U.S.C. §103(a) over WO 98/22,654 is traversed.

Applicants note that the main material of WO 98/22,654 is a compound of the general formula: HO-(R₂SiO)_nH, which have only two hydroxyl groups (-OH) at both the ends that are capable of supporting polymerization. Even if it polymerizes, the polymer thus obtained is only a linear structure, which does not improve the intensity of the coated fiber material.

A main material of the patent (WO-98/22,654) cannot give a sufficient intensity to the coated fiber material, because the polymerization reaction group of it is an organic group in a molecule.

In contrast, the coated film of the present invention has a moderate strength and a moderate pliability, and is capable of being constructed on fiber materials. Therefore, the main material (Compound 1) of the present invention and the others shown in other patents are as results of inventions made by the bases of fundamentally different ideas.



Compound 1 in present invention:

The invention of WO-98/22,654 relates to a food tray which has a coated film with a heat resistance, a water resistance, and a grease-proof property, and which can be used in oven. The compositions of the coating solution of WO 98/22,654 involve four segments including:

1. Silane,
2. Organic compound reacting with it,
3. Water,
4. Catalyst.

The silane which is the main material is $(YX)_a(HX')_bSi(OR)_{4-a-b}$, where Y=an amino group, a hydroxyl group, a carbonyl group, a carboxyl group, a vinyl group, an epoxy group, and a methacryl group.

Characteristics of the reaction in accordance with WO 98/22,654 is that the silane is hydrolyzed and condensed, forming colloidal particles and reacts with the organic compound so that the silane produces a polymeric backbone mainly consisting of silane and oxygen, and the organic compound works as a crosslinking agent.

In the present invention, the main material must be "the alkoxy silane oligomer which has three hydrolyzable substituents and one unhydrolyzable substituent" (see Compound I).

In contrast, WO 98/22,654 has the purpose of giving a water resistance and a grease-proof property other than a heat resistance to the coated material, and make it indispensable, the main material *must have the organic substitution in it*. This organic substitution is also playing a role of the bridge construction material in the case of polymerization. Therefore, the main material indispensable to the invention of WO 98/22,654 must have a reactive group such as an amino group, an epoxy group, etc, in its molecule.

As mentioned above, as for both patents, the structures of the main materials differ, and the mechanisms of the polymerization also differ.

Therefore, the following differences are present between the present invention and the disclosure of WO 98/22,654:

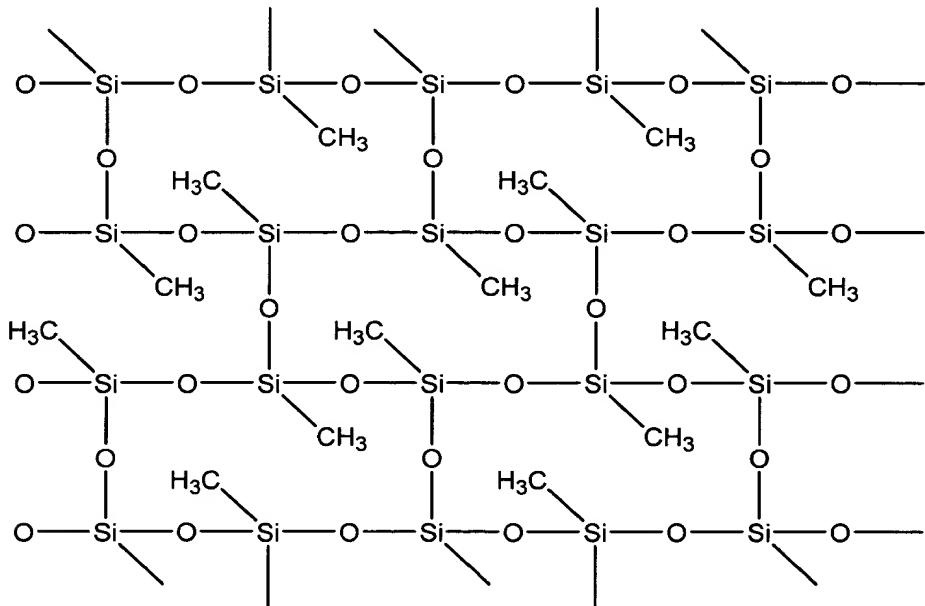
(a) The purposes of use and the demand characteristics of the coated papers differ from each other.

(b) The basic structures of the main materials (or silanes) differ from each other.

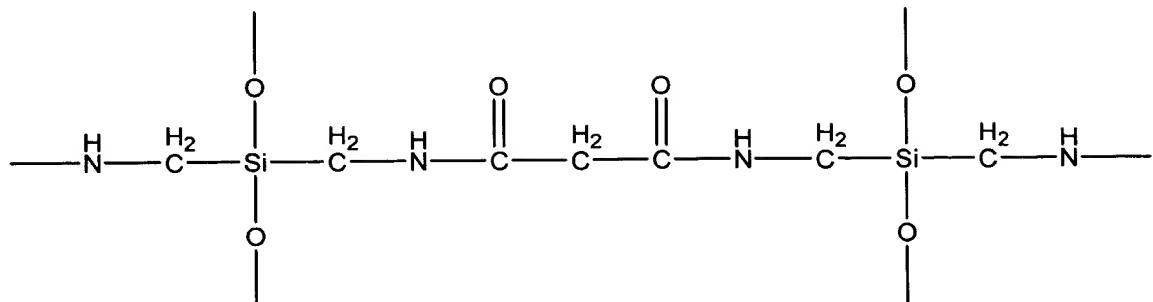
(c) The generation mechanisms of the coated films differ from each other.

As mentioned above, WO 98/22,654 is completely different from the present invention; however, a better appreciation for the substantial differences between the present invention and the disclosure of WO 98/22,654 can be obtained from the following.

In the present invention, the typical final products can be exemplified as involving one kind of crosslinking bonds that consist of a siloxane bond (Si-O-Si) and un-crosslinked bonds (i.e., a Si-CH₃ bond). Such a structure is exemplified by:



In contrast, WO 98/22654 contains two kinds of crosslinking bonds. In one case it is a siloxane bond (Si-O-Si) and in another it is an organic crosslinking bond. Structurally this structure is exemplified by:



(In the case of X = alkyl = CH_3 , Y = amino, and Z = carboxyl)

As is evident from the above comments and exemplified structures, the disclosure of WO 98/22,654 is fundamentally different from the present invention. Therefore, Applicants submit that there can be no reasonable expectation that the skilled artisan, with WO 98/22,654 in hand, would envision the present invention much less the advantages flowing therefrom.

Accordingly, Applicants request withdrawal of this ground of rejection.

The rejections of Claims 1-13 under 35 U.S.C. §103(a) over Iwamiya et al (U.S. 6,403,183) in view of Marwitz et al (see paragraphs 13 and 14 of paper number 8) are traversed.

Claims 1-13 are neither disclosed nor suggested by Iwamiya et al in view of Marwitz et al because both the present invention and the invention as described by Iwamiya et al were commonly owned at the time the present invention was made.

MPEP §706.02(l)(2) states:

Applications and references (whether patents, patent applications, patent application publications, etc.) will be considered by the examiner to be owned by, or subject to an obligation of assignment to the same persons, at the time the invention was made, if the applicant(s) or an attorney or agent of record makes a statement to the effect that the application and the reference were, at the time the invention was made, owned by, or subject to an obligation of assignment to, the same person.

Applicants note that the present invention is assigned to Kazari-Ichi Co., Ltd. as recorded at reel/frame: 012221/0768-0770. Similarly, Iwamiya et al is also assigned to Kazari-Ichi Co., Ltd. as evidenced by the front page of this reference. Therefore, the present invention and the invention as described by Iwamiya et al were, at the time the present invention was made, owned by, or subject to an obligation of assignment to, the same person.

35 U.S.C. §103(c) states:

Subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

As indicated by the Examiner in paragraphs 13 and 14 of paper number 8, Iwamiya et al is a reference that is, at best, available under 35 U.S.C. §§102(e) or (f). Since Applicants have properly established common ownership above, Applicants have removed Iwamiya et al as a possible reference under the above-mentioned provisions granted to Applicants by 35 U.S.C. §103(c) and MPEP §706.02(l)(2).

Withdrawal of the rejections over Iwamiya et al in view of Marwitz et al is requested.

The rejection of Claims 1-13 under 35 U.S.C. §103(a) over Kazari-Ichi Co, Ltd. (EP 1 059 383) in view of Marwitz et al is respectfully traversed on the ground that EP 1 059 383 may not be cited as prior art against the present application.

Specifically, EP 1 059 383 was published on December 13, 2000. In contrast, the present application claims priority to JP 2000-242269, filed on August 10, 2000, nearly four months prior to publication of EP 1 059 383. To perfect their claim of priority, Applicants are filing herewith a certified English translation of JP 2000-242269. Applicants request that the Examiner acknowledge perfection of the claim to priority and entitlement to an earlier

filings date of August 10, 2000. Based on the earlier filing date, EP 1 059 383 is not prior art against the present claims and the rejection over this reference should be withdrawn.

The rejection of Claims 1-13 under 35 U.S.C. §112, second paragraph, is obviated in part by amendment and traversed in part.

Applicants have amended the claims to remove the parenthetical expressions and provide proper antecedent basis for the objected to terms. In addition, Applicants have amended Claims 1 and 8 to define "n" as being 2-10.

With respect to the siloxane bond, Applicants submit that this term is well understood in the art to be a silicone containing compound of the general formula $RSi-[O-SiR]n-O-SiR$. As used in the present context, it would be well appreciated that the silane compounds in claims can form a siloxane compound in which the R groups not involved in the formation of the siloxane bond are as defined in the claims. Therefore, the claims are believed to be definite and not in need of further amendment.

Applicants request withdrawal of this ground of rejection.

Applicants respectfully request that the obviousness-type double patenting rejection over U.S. 6,403,183 in view of Marwitz et al be held in abeyance until an indication of allowable subject matter in the present application. If necessary, a terminal disclaimer will be filed at that time.

The amendment of Claim 1, 5-8, and 11-13 obviates the objection of these claims. Withdrawal of this objection is requested.

The objection to the abstract is believed to be obviated by submission of the substitute abstract. Acknowledgment to this effect is solicited.

Applicants submit that the present application is now in condition for allowance. Early notification of such action is earnestly solicited.

Respectfully submitted,

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In re Jones (CA FC) 21 USPQ2d 1941

In re Jones

U.S. Court of Appeals Federal Circuit
21 USPQ2d 1941

Decided February 28, 1992
No. 91-1380

Headnotes

PATENTS

**1. Patentability/Validity -- Obviousness -- Relevant prior art -- Particular inventions
(§ 115.0903.03)**

Claimed novel salt of acid commonly known as "dicamba" is not so closely related in structure to substituted ammonium salts disclosed in prior patent as to be *prima facie* obvious, since claimed salt is primary amine with ether linkage, whereas diethanolamino salt disclosed in reference patent is secondary amine without ether linkage, since claimed salt is plainly acyclic or linear, whereas morpholino salt, which is only substituted ammonium salt of dicamba with ether linkage disclosed in reference patent, is cyclic in structure, and since isopropylamino salt disclosed in reference patent is primary amine, but has iso-structure quite different from that of claimed salt.

**2. Patentability/Validity -- Obviousness -- Relevant prior art -- Particular inventions
(§ 115.0903.03)**

Claimed novel salt of acid commonly known as "dicamba" cannot be held *prima facie* obvious in

view of salts disclosed in prior patent, even though claimed salt is member of genus of substituted ammonium salts broadly disclosed in reference patent, since reference discloses potentially infinite genus of "substituted ammonium salts" of dicamba, and lists several such salts, but does not specifically disclose salt claimed in application, and since claimed salt is not sufficiently similar to those disclosed in reference as to render it *prima facie* obvious.

3. Patentability/Validity -- Obviousness -- Combining references (§ 115.0905)

Contention that one skilled in herbicidal art would have been motivated to use, with acid commonly known as "dicamba," substituted ammonium salt such as that disclosed in two prior references does not warrant holding that claimed substituted ammonium salt of dicamba for use as herbicide is *prima facie* obvious, since there is no suggestion for combining disclosures of those references either in references themselves, which are directed to shampoo additives and production of morpholine, respectively, or in knowledge generally available to those skilled in art.

Case History and Disposition:

Page 1941

Appeal from the U.S. Patent and Trademark Office, Board of Patent Appeals and Interferences.

Patent application of Rita S. Jones, Michael T. Chirchirillo and Johnny L. Burns, serial no. 07/099,279 (the 2-(2'-aminoethoxy)-ethanol salt of dicamba). From decision upholding rejection of only claim in application, applicants appeal. Reversed.

Attorneys:

Melvyn M. Kassenoff, East Hanover, N.J. (Gerald D. Sharkin and Richard E. Villa, East Hanover; Joanne M. Giesser, Palo Alto, Calif., with him on brief), for appellant.

Harris A. Pitlock, associate solicitor (Fred E. McKelvey, solicitor, with him on brief; Richard E. Schafer, of counsel), for appellee.

Page 1942

Judge:

Before Rich, Archer, and Clevenger, circuit judges.

Opinion Text

Opinion By:

Rich, J.

Rita S. Jones et al. (collectively Jones) appeal from the April 15, 1991 decision of the Patent and Trademark Office (PTO) Board of Patent Appeals and Interferences (Board), Appeal No. 90-1920, sustaining the rejection of claim 1, the only claim of application Ser. No. 07/099,279, titled "The 2-(2'-Aminoethoxy) -- Ethanol Salt of Dicamba," as unpatentable under 35 USC 103. We conclude that the PTO has not presented a *prima facie* case of obviousness, and therefore *reverse*.

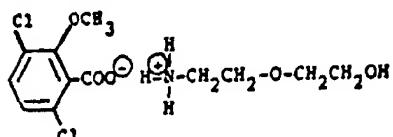
The Invention

The Claimed invention is a novel salt of 2-methoxy-3, 6-dichlorobenzoic acid, which acid is commonly referred to as "dicamba." A known herbicide, dicamba has typically been sold in the form of its known dimethylamine salt.

The sole claim of the application on appeal reads:

1. The 2-(2'-aminoethoxy) ethanol salt of dicamba.

The claimed salt has the following structure:



The Rejection

Claim 1 stands rejected as obvious in view of the combined teachings of the following references:

Richter, U.S. Patent No. 3,013,054, Dec. 12, 1961

Moyle et al., U.S. Patent No. 3,056,669, Oct. 2, 1962

Balassa, U.S. Patent No. 3,725,031, Apr. 3, 1973

Zorayan et al., 88 *Chem. Abstracts* No. 52300j, 1978

Wideman, 86 *Chem. Abstracts* No. 43711a, 1977

Richter, which all agree is the closest prior art, discloses dicamba in free acid, ester, and salt forms, for use as a herbicide. Among the salt forms disclosed are substituted ammonium salts, a

genus which admittedly encompasses the claimed salt. Richter does not specifically disclose the claimed 2-(2'-aminoethoxy) ethanol salt, however. Most notably, Richter discloses (emphasis and bracketed word ours):

Compositions in which X is substituted ammonium are amine salts of 2-methoxy-3, 6-dichlorobenzoic acid [dicamba] and are prepared by the addition of the free acid to various amines. Typical amines which can be used to prepare such amine salts are dimethylamine, trimethylamine, triethylamine, diethanolamine, triethanolamine, isopropylamine, morpholine, and the like. *The resulting products are, respectively, the dimethylamino, trimethylamino, triethylamino, diethanolamino, triethanolamino, isopropylamino, and morpholino salts of 2-methoxy-3, 6-dichlorobenzoic acid.*

Zorayan teaches the amine (H [inf 2] N (CH [inf 2] CH [inf 2] O) [inf 2] H) used to make the claimed salt, as well as the use of that amine in the preparation of surfactants for shampoos, bath preparations, and emulsifiers.

Wideman also teaches the amine disclosed in Zorayan.

The content of the remaining references is unnecessary to our decision.

The Board upheld the examiner's rejection of claim 1 as obvious, finding that the claimed 2-(2'-aminoethoxy) ethanol salt of dicamba and the diethanolamine salt of dicamba specifically disclosed by Richter were "closely related in structure," and that based upon the expectation that "compounds similar in structure will have similar properties," a *prima facie* case of obviousness had arisen. The Board found that Jones' rebuttal evidence (Rule 132 declarations and data reported in the specification) failed to "compare the claimed subject matter with the closest prior art," and accordingly did not serve to rebut the *prima facie* case. This appeal followed.

Analysis

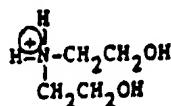
The Solicitor contends that the claimed salt falls within the genus of substituted amine salts of dicamba disclosed by Richter, and that, like Richter's genus, the claimed compound has herbicidal activity. Thus, the Solicitor urges, under the circumstances of this case, (1) the genus/species relationship and (2) the common utility of the claimed and prior art compounds support the Board's holding of *prima facie* obviousness. Moreover, the Solicitor adds, although the claimed compound is neither a homolog nor a position isomer of those salts specifically disclosed in Richter, it is structurally similar thereto, particularly the diethanolamino salt noted by the Board.

Page 1943

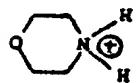
The question of "structural similarity" in chemical patent cases has generated a body of patent law unto itself. Particular types or categories of structural similarity without more have, in past cases, given rise to *prima facie* obviousness; *see, e.g., In re Dillon*, 919 F.2d 688, 692-94, 16 USPQ2d 1897, 1900-02 (Fed. Cir. 1990) (tri-orthoesters and tetra-orthoesters), *cert. denied*,

U.S. ___, 111 S. Ct. 1682 (1991); *In re May*, 574 F.2d 1082, 197 USPQ 601 (CCPA 1978) (stereoisomers); *In re Wilder*, 563 F.2d 457, 195 USPQ 426 (CCPA 1977) (adjacent homologs and structural isomers); *In re Hoch*, 428 F.2d 1341, 166 USPQ 406 (CCPA 1970) (acid and ethyl ester). However, none of these types of structural similarity are involved here. And in any event, this court has previously stated that generalization is to be avoided insofar as specific structures are alleged to be *prima facie* obvious one from the other. *In re Grabiak*, 769 F.2d 729, 731, 226 USPQ 870, 872 (Fed. Cir. 1985).

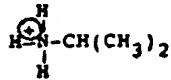
[1] On the basis of the record before us, we cannot sustain the Board's conclusion that the claimed salt and the diethanolamino salt disclosed by Richter are so "closely related in structure" as to render the former *prima facie* obvious in view of the latter. The claimed salt is a primary amine with an ether linkage. The diethanolamino salt disclosed by Richter is a secondary amine, without an ether linkage:



In addition, the only substituted ammonium salt of dicamba expressly disclosed by Richter having an ether linkage is the morpholino salt, which is *cyclic* in structure:



The claimed salt is, plainly, *a* cyclic; i.e., linear. Lastly, while the isopropylamino salt disclosed by Richter is a primary amine, as is the claimed salt, its iso- structure is quite different:



[2] The lack of close similarity of structure is not negated by the fact that the claimed salt is a member of Richter's broadly disclosed genus of substituted ammonium salts of dicamba. The Solicitor contends that " [t]he relative size of the genus disclosed by the prior art would not appear to be a controlling factor in determining whether a *prima facie* case of obviousness exists for a species encompassed within the described genus," citing *Merck & Co. v. Biocraft Labs., Inc.*, 874 F.2d 804, 806-09, 10 USPQ2d 1843, 1845-48 (Fed. Cir.), *cert. denied*, ___ U.S. ___, 110 S. Ct. 498 (1989). We decline to extract from *Merck* the rule that the Solicitor appears to suggest -- that regardless of how broad, a disclosure of a chemical genus renders obvious any species that happens to fall within it. In *Merck*, at issue on appeal was whether claims to a composition of two diuretics, amiloride and hydrochlorothiazide, present in a particular "medically synergistic" weight ratio, would have been obvious in view of a specific prior art disclosure of amiloride in combination with hydrochlorothiazide, one of 1200 such combinations disclosed in the prior art reference. *Id.* at 806, 10 USPQ2d at 1845. Based on the facts before it, including evidence at trial that the experimentation needed to arrive at the claimed dosage was "nothing more than routine," *Id.* at 809, 10 USPQ2d at 1847, the court affirmed the trial court's determination of obviousness. In contrast, though Richter discloses the potentially infinite genus of "substituted ammonium salts" of dicamba, and lists several such

salts, the salt claimed here is not specifically disclosed. Nor, as we have explained above, is the claimed salt sufficiently similar in structure to those specifically disclosed in Richter as to render it *prima facie* obvious. Every case, particularly those raising the issue of obviousness under section 103, must necessarily be decided upon its own facts.

[3] The Solicitor points out that, given the breadth of forms of dicamba (free acid, ester, or salt) disclosed by Richter as having herbicidal utility, one of ordinary skill in the art would appreciate that the dicamba group has significance with respect to imparting herbicidal activity to dicamba compounds. Thus, the Solicitor contends, one skilled in the art would have been motivated to use, with dicamba, substituted ammonium salts made from a known amine, such as the amine disclosed by Zorayan and Wideman, and would have expected such a salt to have herbicidal activity. Before the PTO may combine the disclosures of two or more prior art references in order to establish *prima facie* obviousness, there must be some sug

Page 1944

gestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598-99 (Fed. Cir. 1988). We see no such suggestion in Zorayan, which is directed to shampoo additives, nor in Wideman, which teaches that the amine used to make the claimed compound is a byproduct of the production of morpholine. Nor does the broad disclosure of Richter fill the gap, for the reasons discussed above.

Conspicuously missing from this record is any *evidence*, other than the PTO's speculation (if it be called evidence) that one of ordinary skill in the herbicidal art would have been motivated to make the modifications of the prior art salts necessary to arrive at the claimed 2-(2'-aminoethoxy) ethanol salt. See *Grabiak*, 769 F.2d at 731-32, 226 USPQ at 872 ("[I]n the case before us there must be adequate support in the prior art for the [prior art] ester/ [claimed] thioester change in structure, in order to complete the PTO's *prima facie* case and shift the burden of going forward to the applicant."); *In re Lalu*, 747 F.2d 703, 705, 223 USPQ 1257, 1258 (Fed. Cir. 1984) ("The prior art must provide one of ordinary skill in the art the motivation to make the proposed molecular modifications needed to arrive at the claimed compound.")

Conclusion

We conclude that the PTO did not establish a *prima facie* case of obviousness, and thus did not shift to Jones the burden of coming forward with unexpected results or other objective evidence of non-obviousness. Accordingly, the decision of the Board is

REVERSED.

Footnotes

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Footnote 1. *See generally* Helmuth A. Wegner, "Prima Facie Obviousness of Chemical Compounds," 6 *Am. Pat. L. Assoc. O. J.* 271 (1978).

- End of Case -